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THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

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For: MULTI-TIER WIRELESS  
COMMUNICATIONS ARCHITECTURE,  
APPLICATIONS AND METHODS

CUSTOMER NO.: 23720

**APPEAL BRIEF**

**MAIL STOP APPEAL BRIEF - PATENTS**

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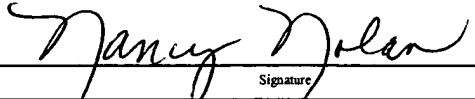
Sir:

On October 24, 2005, Appellants filed a Notice of Appeal in response to a Final Office Action dated June 24, 2005, issued in connection with the above-identified application. In support of the appeal, Appellants hereby submit this Appeal Brief to the Board of Patent Appeals and Interferences.

Since the Notice of Appeal for the present invention was received and stamped by the USPTO Mailroom on October 26, 2005, the two-month date for filing this Appeal Brief is

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December 26, 2005. This Appeal Brief is being filed on February 26, 2006, however since this date falls on a Sunday, this Appeal Brief is being filed on Monday, February 27, 2006.

Pursuant to 37 C.F.R. 1.136(a), Appellants hereby petition for a two-month extension of time to enable this paper to be timely filed, up to and including February 26, 2006. The fee for a two-month extension of time is \$450.00.

**The Commissioner is authorized to deduct the two-month extension fee of \$450.00 from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786. Additionally, the Commissioner is authorized to deduct the fee for filing this Appeal Brief in the amount of \$500.00 from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786/6000.000700.**

No other fee is believed to be due in connection with the filing of this document. However, should any fee under 37 C.F.R. §§ 1.16 to 1.21 be deemed necessary for any reason relating to this document, the Commissioner is hereby authorized to deduct said fee from Williams, Morgan & Amerson, P.C. Deposit Account No. 50-0786/60-00.000700.

**I. REAL PARTY IN INTEREST**

The present application is owned by Symbol Technologies, Inc.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are not aware of any related appeals and/or interferences that might affect the outcome of this proceeding.

### **III. STATUS OF CLAIMS**

Claims 4-30 and 32-34 remain pending in this application.

The Examiner rejected claims 4-30 and 32-34 under 35 U.S.C. § 103(a) as being unpatentable over the combination of one or more of the following references: U.S. Patent No. 5,790,536 (*Mahany*), U.S. Patent No. 6,377,608 (*Zyren*), U.S. Patent No. 6,526,335, (*Treyz*), U.S. Patent No. 6,160,493 (*Smith*), U.S. Patent No. 5,928,291 (*Jenkins*), U.S. Patent No. 4,017,825 (*Pichey*), and U.S. Patent No. 6,466,981 (*Levy*). Also, the Examiner objected to claim 9 for failing to further limit the subject matter of the independent claim.

The claims currently under consideration, *i.e.*, claims 4-30 and 32-34, are listed in the Claims Appendix submitted herewith.

### **IV. STATUS OF AMENDMENTS**

After the Final Rejection, claim 4 was amended to address an informality. No other amendments were made to any other claims.

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

One or more embodiments of the present invention are directed to a method and a multi-tier communications system in which communications can occur in an efficient manner using at least two different communication protocols. When multiple communication protocols are employed in a communications system, the potential of interference between the communicating devices is present. The present invention, through various embodiments, seeks to reduce the interference in an effort to improve the communication.

The described embodiments of the present invention are generally directed to a multi-tier communications system in which a first-tier base station (*e.g.*, 122) and a second-tier base station (*e.g.*, 142, 152), a remote unit (*e.g.*, 166, 174) can engage in communications using at least two different communications protocols. Patent Application, page 6, lines 1-6. The distinction between the first-tier and second-tier base stations is discussed in the patent application and the claims. For example, the patent application discloses that while the first-tier base stations have a longer transmission range compared to the second-tier base stations, the second-tier base stations consume lower power. *See* Patent Application, page 6, lines 20-22. As another example, as described in the patent application and specified in some of the independent claims, the first-tier base station operates in accordance with a first communications protocol, while the second-tier base stations communicate with each other using a protocol different from the first communications protocol. *Id.* at page 6, lines 7-15; page 6, line 20 – page 7, line 4.

As explained more fully in the patent application, the first-tier base station 122 and the second-tier base station (which typically consume lower power) can be advantageously coupled to extend the range of communications over which the remote device(s) can be reached. *Id.* at page 9, lines 13-18. For example, Figure 4 of the patent application illustrates that a plurality of second-tier base stations 462, 470 may, in one embodiment, be “serially” coupled to control the door locks 444 on a given floor of a hotel. *Id.* at page 11, lines 6-9. In Figure 4, the first-tier base station 450 communicates with the first second-tier base station 460, which can then wirelessly communicate with another second-tier base station 470 to control the door locks on the distant end of the floor. *Id.* at page 11, lines 20 – page 12, line 19. In this manner, the door locks can be controlled by a host over any desirable amount of distance though a plurality of linked, low-power consuming second-tier base stations 462, 470. Similarly, this multi-tier

arrangement may be deployed to control a variety of other remote units described in the patent application, such as thermostats or security cameras. *Id.* at page 13, lines 5-13.

Thus, while the use of the multiple communication protocols in the described multi-tier communications systems allows for base stations and/or wireless devices to communicate over extended distances, as described above, the use of multiple communication protocols, however, can also introduce the potential of interference between the communicating devices. For example, assuming the first-tier base station and the second-tier base station each employ frequency hopping to transmit data, then there is a potential for channel interference when the first-tier base station and the second-tier base stations are communicating with their respective devices. The claims and the described embodiments illustrate a manner of reducing this interference. For instance, in one embodiment, the first-tier base station may indicate to the second-tier base station one or more discrete number of channels that may be utilized by the second-tier base station to communicate with a device, such as a wireless device. *Id.* at page 39, line 13-page 40, line 13. The discrete channels that are identified by the first-tier base station are those channels that the first-tier base station is itself not using (or will not be using) for communications. *Id.* In this manner, both of the base stations can communicate with reduced possibility of interference. *Id.*

Of course, the present invention should not be considered as limited to the specifically disclosed embodiments discussed immediately above.

## **VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Whether claim 9 further limits the subject matter of the claim from which it depends?

2. Whether independent claim 4 and its dependent claims are patentable under 35 U.S.C. § 103(a) over U.S. Patent No. 5,790,536 (*Mahany*), in view of U.S. Patent No. 6,377,131 (*Zyren*)?
3. Whether independent claim 15 and its dependent claims are patentable under 35 U.S.C. § 103(a) over U.S. Patent No. 5,790,536 (*Mahany*), in view of U.S. Patent No. 6,377,131 (*Zyren*)?
4. Whether independent claims 7 and 33, and their respective dependent claims are patentable under 35 U.S.C. § 103(a) over the cited references U.S. Patent No. 5,790,536 (*Mahany*), in view of U.S. Patent No. 6,377,131 (*Zyren*)?
5. Whether dependent claim 5 is unpatentable under 35 U.S.C. 103(a) over the cited references?
6. Whether dependent claims 22-24 and 27 are patentable over the cited references?
7. Whether dependent claims 26 and 30 are patentable over the cited references?
8. Whether dependent claim 28 is patentable over the cited references?
9. Whether dependent claim 29 is patentable over the cited references?

## **VII. ARGUMENT**

### **A. Legal Standards**

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the

knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending there from is non-obvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142. The Federal Circuit has emphasized that, in an

obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.*

Additionally, it is well established that teaching away by the prior art constitutes *prima facie* evidence that the claimed invention is not obvious. *See, inter alia, In re Fine*, 5 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1988); *In re Nielson*, 2 U.S.P.Q.2d (BNA) 1525, 1528 (Fed. Cir. 1987); *In re Hedges*, 228 U.S.P.Q. (BNA) 685, 687 (Fed. Cir. 1986).

**B. Claim 9 is a proper dependent claim**

The Examiner has objected to claim 9 for failing to further limit the subject matter of the independent claim. In particular, the Examiner states that claim 9 “recites, verbatim, the last limitation of parent claim 7.” *See* Final Office Action, page 2. The Appellants respectfully disagree. The parent claim 7 calls for determining “one or more” discrete number of frequency channels that will not be used for transmission. Thus, claim 7 refers to determining at least one discrete frequency channel. In contrast, claim 9 specifies determining a “plurality of” (more than one) discrete number of frequency channels. Accordingly, dependent claim 9 further defines the subject matter of independent claim 7. Thus, the Examiner’s objection to claim 9 is without merit, and should be rejected.



C. **Independent claim 4 (and its dependent claims) are patentable over Mahany in view Zyren**

1. **The cited references fail to teach one or more of the claimed features**

Claim 4 is directed to a multi-tier system for digital radio communication. The system comprises a first-tier base station, a wireless device, and a combination unit. The first tier base station operates in accordance with a first communication protocol. The wireless device operates in accordance with a second communication protocol that is different from the first communication protocol. The combination unit is wirelessly connected to the first-tier base station and connected to the wireless device, and wherein the first-tier base station communicates with the wireless device via the combination unit. Claim 4 further specifies that the first-tier base station communicates to the combination unit one or more discrete number of frequency channels that may be utilized by the combination unit to communicate with the wireless device.

As explained below, *Mahany* and *Zyren*, either alone or in combination, fail to teach one or more of the features of claim 4. The dispute between the parties centers on the last claimed feature, which specifies that the first-tier base station communicates to the combination unit one or more discrete number of frequency channels that may be utilized by the combination unit to communicate with the wireless device. The Examiner admits that *Mahany* fails to teach this feature but argues that it is disclosed in *Zyren*. See Final Office Action, page 3. The Appellants respectfully disagree.

Appellants contend that *Zyren* is lacking in at least two areas with respect to the last claimed feature. First, *Zyren* does not teach a first-tier base station that communicates to a combination unit. Second, *Zyren* does not teach communicating one or more discrete number of

frequency channels that may be utilized by the combination unit to communicate with the wireless device. Each of these deficiencies in *Zyren* is discussed in turn below.

With respect to the first deficiency, *Zyren* does not teach a first-tier base station that communicates to a combination unit, as is required by claim 4. The Examiner argues that *Zyren* teaches the last feature of claim 4 because it discloses an access point 21 that uses a beacon generator 80 to transmit a hop sequence used for communications in the WLAN 20. *See* Office Action, pp. 3 and 14. According to the Examiner, the “access point” (the “first-tier base station,” according to the Examiner) contains the beacon generator that informs the ad hoc devices (the “combination units,” according to the Examiner), which frequencies to use through the beacon signal.” *Id.* at page 3. It is worth emphasizing that the Examiner’s entire argument rests on the presumption that the access point 21 corresponds to the “first-tier base station,” and the “ad hoc radio” corresponds to the “combination unit.” But this premise is flawed, as explained below.

To understand the flaw in the Examiner’s argument, it is first helpful to understand the role of the “combination unit” in claim 4, and one need not look any further than the language of claim 4 to understand this role. As noted, claim 4 calls for a first-tier base station, a wireless device, and a combination unit. The claim language informs the reader as to how the combination unit relates to these other devices. For example, claim 4 specifies that the combination unit is wirelessly connected to the first-tier base station and the wireless device. Further, the claim specifies that it is through the combination unit that the first-tier base station communicates with the wireless device. Moreover, the claim specifies that the one or more frequency channels that are communicated by the first-tier base station to the combination unit are those channels that can be “utilized by the combination unit to communicate with the wireless device.” Thus, claim 4 clarifies two primary points with respect to the combination

unit: (1) the first-tier base station communicates with the wireless device through the combination unit; and (2) the combination unit uses those frequency channels that are provided by the first-tier base station to communicate with the wireless device.

In *Zyren*, the ad hoc device (which the Examiner calls the “combination unit”) possesses neither of these features. As such, *Zyren* does not disclose a “combination unit”. In *Zyren*, the access point (the “first-tier base station” according to the Examiner) does not communicate with any wireless device via the ad hoc device (the “combination unit,” according to the Examiner). In fact, *Zyren* teaches the opposite – there is no communication between the WLAN and *ad hoc* devices, much less communication by the WLAN access point through the *ad hoc* devices with other wireless device(s). *Zyren*, 2:48-50 (each *ad hoc* radio and the WLAN proceeds on a non-interfering basis after the transmission of the beacon). Even the Examiner (and rightfully so) does not attempt to allege that *Zyren* teaches the access point 21 communicates with any wireless devices “via” the *ad hoc* devices (the “combination unit”). For this reason alone, claim 4 and its dependent claims are allowable.

Claim 4 and its dependent claims are allowable for an additional reason in that *Zyren* does not teach or suggest transmitting one or more frequency channel(s) to the combination unit, where the combination unit can then use those frequency channel(s) to communicate with the wireless device. In fact, *Zyren* teaches the opposite of what is claimed in claim 4. As *Zyren* explains, the access point 21 generates a beacon that indicates the hop sequence that is used by the WLAN 20. *Id.* at col. 6, lines 19-21 (stating that the beacon modulation includes the centre frequency of the channel occupied by the WLAN). Based on the hopping sequence of the WLAN network, the ad hoc network radio can determine an appropriate action to take, including shutting down, switching to a lower-power, etc. *Zyren*, col. 2, lines 51-54. Thus, in *Zyren*, the

access point (which the Examiner asserts corresponds to the “first-tier base station” in claim 4) transmits a beacon signal indicating the channels that are being used by the access point itself. In contrast, claim 4 specifies that the first-tier base station specifies discrete channels that are **not** used by the first-tier base station. This is because the claim specifies that the first-tier base station communicates to the combination unit frequency channel(s) that may be utilized by the combination unit to communicate with the wireless device. Thus, the channels that “may be utilized by the combination unit” are those that are not being used by the first-tier base station. Indeed, the specification confirms this point. Because *Zyren* teaches the opposite of what is claimed, claim 4 and its dependent claims are allowable for this additional reason.

## 2. The Examiner’s Response

The Examiner does not dispute that the beacon signal indicates the frequency channels that are being used by the access point in the WLAN (as opposed to those that the ad-hoc devices can use). Nevertheless, the Examiner asserts that, based on the access point, it is transmission of frequencies that it will use itself, the ad hoc devices can thereafter determine the unused frequencies “by removing the used frequencies from the total list of frequencies.” *See* Final Office Action, page 14. The Examiner’s position highlights the fundamental problem with the rejection. Claim 4 specifies that the frequency channel(s) that are transmitted are those which the combination can then use to communicate with the wireless device. Here, the Examiner acknowledges that the “unused” frequencies need to be calculated by the ad hoc radio. Thus, the Examiner admits, and rightfully so, that the frequencies transmitted by the access point 21 in *Zyren* are not those which the ad hoc radios can use (in fact, they are the opposite – they are frequencies that are not to be used by the ad hoc radios). Thus, the Examiner’s response further reinforces the point that claim 4 and its dependent claims are allowable over the cited references.

3. **The Examiner has Failed to Establish a Prima Facie Case of Obviousness**

In addition to failing to show each and every claimed feature, the Examiner has also failed to establish a *prima facie* case of obviousness because the Examiner has failed to prove the requisite motivation to combine the references in the suggested manner. The Examiner's stated reason for the motivation to combine *Mahany* and *Zyren* is that *Zyren* teaches that frequency hopping is used for communication to avoid interference. See Final Office Action, pp. 3-4. This, however, provides no reason for why the two references should be combined in the manner suggested by the Examiner. It is merely a conclusory statement, which the Federal Circuit has already noted is inadequate to establish a *prima facie* case of obviousness. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002).

D. **Independent claim 15 (and its dependent claims) are patentable over Mahany in view Zyren**

Claim 15 is allowable over the cited references because *Mahany* and *Zyren* (when considered alone or in combination) at least do not teach or suggest that the first-tier base station and the second-tier base station coordinate to determine the one or more discrete number of frequency channels that will not be used by the first communications protocol, and where the first-tier base station directs the second-tier base station to use only the one or more discrete number of frequency channels that are not used by the first-tier base station. The Examiner, while admitting that *Mahany* does not teach this claimed feature, argues it is nevertheless disclosed in *Zyren*.

As explained above with respect to claim 4, *Zyren* does not disclose or suggest a first-tier base station that directs the second-tier base station to use frequency channels that are not used by the first-tier base station. At best, as discussed above, *Zyren* discloses an access point 21 that

transmits channels that are used by the access point itself (as opposed to channels that are not used by the access point). Thus, for at least this reason, claim 15 and its dependent claims are allowable.

Additionally, the Examiner conveniently ignores that claim 15 calls for the coordination to be between the first-tier base station and the second-tier base station. In *Zyren*, the coordination is between an access point and an *ad hoc* device, which is a mobile device such a cellular telephone or a laptop computer, and not a “base station.” *Zyren*, 1:25-31. While the access point 21 disclosed in *Zyren* may be a “base station”, an *ad hoc* device is not. A “base station,” by definition, is a central radio transceiver that allows communications among mobile radio devices within a given range. Thus, while the access point meets this definition, the ad-hoc device does not. The *ad hoc* devices in *Zyren* are mobile devices, and not a “base station” that facilitates communication with other mobile devices. *Zyren* does not suggest, and the Examiner correctly does not (and cannot) contend, that an ad hoc device is a base station. Notably, the ad hoc device of *Zyren* more properly corresponds to a “remote unit” referred to in claim 15, and not to the first or second-tier “base stations” referenced in claim 15. Thus, for at least this reason, claim 15 and its dependent claims are allowable.

Further, claim 15, as well as the dependent claims, is allowable because the Examiner has failed to prove the requisite motivation to combine the references in the suggested manner. The argument presented above with respect to claim 4 is incorporated herein by reference.

**E. Independent claims 7 and 33 (and the dependent claims) are patentable over Mahany in view of Zyren**

Claim 7 is also allowable over *Zyren* and *Mahany* because these references, whether considered alone or in combination, fail to teach coordinating between a device using the second

communication protocol and a transmitting device transmitting via the first communication protocol to determine one or more discrete number of frequency channels that will not be used by the first communications protocol. The Examiner, conceding that this feature is not taught by *Mahany*, argues that it is disclosed in *Zyren*. However, as explained above with respect to claim 4, *Zyren* describes a beacon signal that indicates one or more frequencies that are used by the access point, and not frequency channels that are not used by the access point. For at least this reason, independent claims 7 and 33 (and their respective dependent claims) are allowable.

Further, these claims are allowable because the Examiner has failed to prove the requisite motivation to combine the references in the suggested manner. The argument presented above with respect to claim 4 is incorporated herein by reference.

**F. Dependent claims 5, 22-24 and 26-30 are patentable over the cited references for additional reasons**

The dependent claims 5, 22-24, and 26-30 are allowable for at least the reasons their respective independent claims are allowable. Moreover, these dependent claims are further allowable for the additional features recited therein. In rejecting these dependent claims, the Examiner relies on no less than seven (7) references. This large number of references highlights the Examiner's strategy in rejecting the claims – the Examiner simply uses the claims as a template in formulating his rejections using hindsight. This is clearly improper. Notwithstanding the Examiner's flawed approach, as discussed below, these seven references, when considered alone or in combination, fail to teach the features recited in the dependent claims.

1. **Claim 5 is allowable**

Claim 5 depends from claim 1. The Examiner argues that the combination of *Mahany*, *Zyren* and U.S. Patent No. 6,526,335 (*Treyz*) renders this claim obvious. Claim 5 specifies that the combination unit includes at least one of ports for communicating via infrared wireless transmission, facsimile transmission, and transmission using a modem. The Examiner, while acknowledging that neither *Mahany* or *Zyren* discloses this feature, asserts that it is, nevertheless, taught by *Treyz*. In particular, the Examiner points to component 124 of Figure 3, which shows a personal computer 14 installed in an automobile. *Treyz*, col. 13:37-41.

The personal computer of *Treyz*, however, is not a “combination unit,” which is what claim 5 requires. As discussed above (in connection with independent claim 4), the combination unit (1) is through which the first-tier base station communicates with the wireless device; and (2) uses those frequency channels that are provided by the first-tier base station to communicate with the wireless device. Here, the personal computer 14 (which includes element 124 identified by the Examiner) of *Treyz* is not a “combination unit” because a first-tier base station does not communicate through it, and it is not provided frequency channels that it can then use to communicate with a wireless device. Thus, for this additional reason, claim 5 is allowable.

Claim 5 is further allowable because the Examiner has failed to provide the requisite motivation to combine. The Examiner conclusorily states that the motivation to combine is present because it would be advantageous to provide more services to users to increase product marketability. But this statement is no suggestion to combine three references in the manner alleged by the Examiner. It is merely an unsupported statement without any basis in any of the



prior art references. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness.

**2. Claims 22-24 and 27 are allowable**

Claims 22-24 and 27, which depend, from independent claim 15, recite additional features using the “second communications protocol.” For example, claim 22 specifies “wherein the second communications protocol is used to identify the identity and location of a missing vehicle.” Similarly, the other dependent claims call for using the second communications protocol for performing other features. The Examiner argues that *Treyz* teaches each of the disclosed features. The Appellants respectfully disagree.

To highlight the flaw in the Examiner’s reasoning, it is first helpful to understand the term “second communications protocol,” as it is used in claim 15, the independent claim. One need not look beyond the language of claim 15 to understand this term. Claim 15 specifies that a second communications protocol is “independent of the first communications protocol,” and that the second communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol.

The Examiner argues that claims 22-24 and 27 are disclosed in col. 32, lines 32-57 of *Treyz*. This passage, however, simply describes various types of identification information that a user can provide to a kiosk to locate his or her automobile. As such, there is no mention of using a “second communications protocol” (as described in claim 15) to perform the features recited in claims 22-24 and 27. What *Treyz* does describe in the following paragraph, namely at col. 32, is that a GPS receiver may be used to locate the automobile. But even this paragraph does not

describe performing the various claimed acts using the “second communications protocol,” as that term is utilized in independent claim 15 from which claims 22-24 and 27 depend. For example, contrary to the Examiner’s assertions, *Treyz* does not describe a second communication protocol that is independent of the first communication protocol and where that second communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band, and where the second communications protocol operates at a lower power level than the first communications protocol. For at least this reason, claims 22-24 and 27.

Moreover, the Examiner has not pointed to a single basis in any of the cited references as to why one skilled in the art would combine the communications system (GPS) of *Treyz* with the multi-tier system described in *Mahany* and the beacon-based system described in *Zyren*. For this additional reason, claims 22-24 and 27 are allowable.

### **3. Claims 26 and 30 are allowable**

Claims 26 and 30, which depend, from independent claim 15, recite additional features using the “second communications protocol.” For example, claim 22 specifies “wherein the second communications protocol is used to transmit information associated with a weight of a vehicle.” Similarly, the other dependent claim calls for using the second communications protocol for performing other features. The Examiner argues that U.S. Patent No. 5,928,291 (*Jenkins*) teaches each of the disclosed features of claims 26 and 30. The Appellants respectfully disagree.

These claims all call for using the “second communications protocol,” which, as noted above, refers to a protocol that is independent of the first communication protocol and utilizes

frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol. The Examiner argues that claims 26 and 30 are disclosed in col. 3, lines 42-59 of *Jenkins*. This passage simply describes collecting a variety of information, such as miles traveled, gas mileage, and the like. There is no mention of using a “second communications protocol” (as described in claim 15) to perform the features recited in claims 26 and 30 in the cited passage. While the preceding paragraph describes using a GPS receiver in connection with the collected information, even this paragraph does not describe performing the various claimed acts using the “second communications protocol,” as that term is utilized in the independent claim from which claims 26 and 30 depend. For at least this reason, claims 26 and 30 are allowable.

Moreover, the Examiner has not pointed to a single basis in any of the cited references as to why one skilled in the art would combine the communications system (GPS) of *Jenkins* with the multi-tier system described in *Mahany* and the beacon-based system described in *Zyren*. For this additional reason, claims 26 and 30 are allowable.

**4. Claim 28 is allowable**

Claim 28, which depends from independent claim 15, recites an additional feature of using the “second communications protocol” to control traffic control signals. The Examiner argues that U.S. Patent No. 4,017,825 (*Pichey*) teaches the disclosed feature of claim 28. The Appellants respectfully disagree.

The term “second communications protocol,” as it is utilized in claim 28, refers to a protocol that is independent of the first communication protocol and utilizes frequency hopping

to transmit a message over a discrete number of frequency channels within a frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol. The Examiner argues that the subject matter of claim 28 is disclosed in col. 1, lines 27-37 of *Pichey*. This passage simply describes signals transmitted from an emergency vehicle, and there is no mention of using a “second communications protocol” (as described in claim 15) to perform the features recited in claim 28. For at least this reason, claim 28 is allowable.

Moreover, the Examiner has not pointed to any motivation to combine in any of the cited references as to why one skilled in the art would combine the communications system of *Pichey* with the multi-tier system described in *Mahany* and the beacon-based system described in *Zyren*. For this additional reason, claim 28 is allowable.

#### **5. Claim 29 is allowable**

Claim 29, which depends from independent claim 15, recites an additional feature of using the “second communications protocol” to inform a prospective customer that a taxicab is available. The Examiner argues that U.S. Patent No. 6,466,131 (*Levy*) teaches the disclosed feature of claim 29. The Appellants respectfully disagree.

The term “second communications protocol,” as it is utilized in claim 29, refers to a protocol that is independent of the first communication protocol and utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol. The Examiner argues that the subject matter of claim 29 is disclosed in col. 10, lines 21-36 of *Levy*. This passage simply describes signals transmitted from an

emergency vehicle. However, there is no mention of using a “second communications protocol” (as described in claim 15) to perform the features recited in claim 29. For at least this reason, claim 29 is allowable.

Moreover, the Examiner has not pointed to any motivation to combine in any of the cited references as to why one skilled in the art would combine the communications system of *Levy* with the multi-tier system described in *Mahany* and the beacon-based system described in *Zyren*. For this additional reason, claim 29 is allowable.

### **VIII. Claims Appendix**

The claims that are the subject of the present appeal are set forth in the attached Claims Appendix.

### **IX. Evidence Appendix**

There is no evidence relied upon in this Appeal with respect to this section.

### **X. Related Proceedings Appendix**


There are no related appeals and/or interferences that might affect the outcome of this proceeding.

In view of the foregoing, it is respectfully submitted that the Examiner erred in not allowing all claims pending in the present application over the prior art of record. **The undersigned attorney may be contacted at (713) 934-4064 with respect to any questions, comments, or suggestions relating to this Appeal Brief.**

Respectfully submitted,

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CUSTOMER NO. 23720

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## **CLAIMS APPENDIX**

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Previously Amended) A multi-tier system for digital radio communication, comprising:

a first-tier base station comprising a first radio transceiver operating in accordance with a first communication protocol;

a wireless device comprising a second radio transceiver operating in accordance with a second communication protocol that is different from the first communication protocol;

a combination unit that is wirelessly connected to the first-tier base station and connected to the wireless device;

wherein the first communications protocol is employed for transmissions at a higher speed and has a longer range than the second communications protocol and wherein the first-tier base station communicates with the wireless device via the combination unit,

and wherein the first-tier base station communicates to the combination unit one or more discrete number of frequency channels that may be utilized by the combination unit to communicate with the wireless device.

5. (Previously Presented) The system as in claim 4, wherein the combination unit includes at least one of ports for communicating via infrared wireless transmission, facsimile transmission, and transmission using a modem.

6. (Previously Presented) The system as in claim 4, wherein the first-tier base station communicates to the combination unit a plurality of the one or more discrete number of frequency channels that may be employed by the combination unit.

7. (Previously Presented) A method for coordinating communication, comprising:  
transmitting via a first communications protocol using a wireless medium, wherein the first communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band;  
transmitting via a second communications protocol to communicate using a wireless medium, wherein the second communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within the frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol;  
coordinating between a device using the second communication protocol and a transmitting device transmitting via the first communication protocol to determine one or more discrete number of frequency channels that will not be used by the first communications protocol and transmitting via the second communications protocol using the one or more discrete number of frequency channels that are not used by the first communications protocol.



8. (Original) The method as in claim 7, wherein the frequency band is the 2.4 GHz ISM band.

9. (Previously Presented) The method as in claim 7, wherein the act of coordinating comprises determining a plurality of discrete number of frequency channels that will not be used by the first communications protocol and transmitting via the second communications protocol using the plurality of discrete number of frequency channels that are not used by the first communications protocol.

10. (Previously Presented) The method as in claim 7, wherein the second communications protocol operates at a power level of about 1 mW and wherein the first communications protocol operates at a power level of about 100 mW.

11. (Previously Presented) The method as in claim 7, wherein the coordinating is between an access point transmitting via the first communication protocol and a combination unit transmitting via the second communication protocol to a wireless device.

12. (Previously Presented) The method as in claim 7, wherein the one or more discrete number of frequency channels that are not being used by the first communications protocol are frequency channels on either end of the frequency band.

13. (Previously Presented) The method as in claim 7, wherein at least two of the one or more discrete number of frequency channels are not being used, and wherein the at least two frequency channels that are not being used by the first communications protocol are the two frequency channels on either end of the frequency band.

14. (Original) The method as in claim 7, wherein the first communication protocol is the IEEE 802.11 protocol.

15. (Previously Presented) A system for wireless communication, comprising:

- a first-tier base station comprising a first radio transceiver operating in accordance with a first communication protocol;
- a second-tier base station comprising a second radio transceiver operating in accordance with a second communication protocol independent of the first communication protocol;
- a first-tier remote unit wirelessly connected to the first-tier base station through the first radio transceiver;
- a second-tier remote unit wirelessly connected to the second-tier base station through the second radio transceiver;

wherein the first-tier remote unit connects to the first-tier base station via a first communications protocol using a wireless medium, wherein the first communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band;

wherein the second-tier remote unit connects to the second-tier base station via a second communications protocol using a wireless medium, wherein the second communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol;

and wherein the first-tier base station and the second-tier base station coordinate to determine the one or more discrete number of frequency channels that will not be used by the first communications protocol and direct the second-tier base station to use only the one or more discrete number of frequency channels that are not used by the first-tier base station.

16. (Previously Presented) The system as in claim 15, wherein the frequency band is the 2.4 GHz ISM band and wherein the first communications protocol is the IEEE 802.11 protocol.

17. (Original) The system as in claim 15, wherein the first communications protocol operates at a power level of about 100 m W.

18. (Original) The system as in claim 15, wherein the second communications protocol operates at a power level of about 1 m W.

19. (Previously Presented) The system as in claim 15, wherein the one or more discrete number of frequency channels that are not being used by the first communications protocol are frequency channels on either end of the frequency band.

20. (Previously Presented) The system as in claim 15, wherein at least two of the one or more discrete number of frequency channels that are not being used, and wherein the at least two frequency channels that are not being used by the first communications protocol are the two frequency channels on either end of the frequency band.

21. (Original) The system as in claim 15, wherein the second communications protocol is used to communicate among at least two moving vehicles.

22. (Original) The system as in claim 15, wherein the second communications protocol is used to identify a vehicle using a database of vehicle information.

23. (Original) The system as in claim 15, wherein the second communications protocol is used to identify the identity and location of a missing vehicle.

24. (Original) The system as in claim 15, wherein the second communications protocol is used to obtain diagnostic information for a vehicle.

25. (Original) The system as in claim 15, wherein the second communications protocol is used among at least two vehicles to prevent collisions between the at least two vehicles.

26. (Previously Presented) The system as in claim 15, wherein the second communications protocol is used to transmit information associated with a weight of a vehicle.

27. (Original) The system as in claim 15, wherein the second communications protocol is used to transmit data about a fixed location to a vehicle.

28. (Original) The system as in claim 15, wherein the second communications protocol is used by a vehicle to control traffic control signals.

29. (Previously Presented) The system as in claim 15, wherein the second communications protocol is used to inform a prospective customer that a taxicab is available.

30. (Previously Presented) The system as in claim 15, wherein the second communications protocol is used to determine information associated with a toll.

31. (Cancelled).

32. (Previously Presented) The system as in claim 4, wherein the first communications protocol and the second communications protocol each utilizes frequency hopping to transmit data.

33. (Previously Presented) A method for coordinating communication, comprising:  
transmitting via a first communications protocol using a wireless medium, wherein the first communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within a frequency band;  
transmitting via a second communications protocol to communicate using a wireless medium, wherein the second communications protocol utilizes frequency hopping to transmit a message over a discrete number of frequency channels within the frequency band, wherein the second communications protocol operates at a lower power level than the first communications protocol;  
coordinating between a device using a second communications protocol and a transmitting device transmitting via the first communication protocol to determine a plurality of discrete number of frequency channels that will be used by the first communications protocol and transmitting via the second communications protocol using one or more discrete number of frequency channels other than those used by the first communications protocol.

34. (Previously Added) The method as in claim 33, wherein coordinating with the transmitting device comprises indicating from the transmitting device to the device using the second communications protocol the one or more discrete number of frequency channels that may be employed.